National Unit Specification: general information

UNIT Computer Games: Media Assets (SCQF level 5)

CODE F916 11

SUMMARY

The aim of this Unit is for candidates to gain an understanding of the different types of media assets required for developing a computer game. Candidates will identify and describe legal methods of acquiring media assets and learn how to plan and produce media assets for use in a game development environment.

OUTCOMES

1 Compare media assets in an existing computer game.
2 Plan media assets for a specified brief.
3 Produce media assets for a specified brief.

RECOMMENDED ENTRY

While entry is at the discretion of the centre it would be beneficial if candidates had the following IT skills:

D01D 10 *Information Technology (Intermediate 1)*

or equivalent qualifications or experience.

CREDIT VALUE

1 credit at SCQF level5 (6 SCQF credit points at SCQF level 5*).

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

Administrative Information

Superclass: CB

Publication date: July 2010

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Version: 01

National Unit Specification: general information (cont)

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CORE SKILLS

Opportunities to develop aspects of Core Skills are highlighted in the Support Notes of this Unit Specification.

National Unit Specification: statement of standards

UNIT Computer Games: Media Assets (SCQF level 5)

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit Specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME 1

Compare media assets in an existing computer game.

Performance Criteria

(a) Accurately describe media assets in existing games.
(b) Clearly compare different media assets in existing games of the same genre.
(c) Accurately identify and describe legal methods to acquire media assets.

OUTCOME 2

Plan media assets for a specified brief.

Performance Criteria

(a) For a specified brief, accurately describe media assets to be obtained from legitimate sources.
(b) Clearly record sources for media assets.
(c) Explain why the sources have been selected
(d) For a specified brief, accurately describe media assets to be captured or created.

OUTCOME 3

Produce media assets for a specified brief.

Performance Criteria

(a) For a specified brief, produce suitable sourced and created intermediate media assets.
(b) Compare appropriate software required for the production of a media asset.
(c) Select appropriate software required for the production of a media asset.
(d) Carry out intermediate modifications to selected media assets to accurately meet the brief.

National Unit Specification: statement of standards (cont)

UNIT Computer Games: Media Assets (SCQF level 5)

EVIDENCE REQUIREMENTS FOR THIS UNIT

The Evidence Requirements for this Unit will be the production of a digital or paper portfolio containing the following items:

1 A report describing at least five media assets in existing games.

2 A detailed report clearly comparing at least two assets in two different games from the same genre.

3 A short report identifying and describing three legal methods to acquire media assets.

4 A detailed description of media assets to be legitimately sourced.

5 A reference list citing sources of media assets eg game environments, CD-Rom resources, websites, etc

6 A short report explaining the selection of sources.

7 A detailed description of media assets to be captured or created.

8 At least two sourced media assets and at least two created media assets in a digital format for a game development environment, for example:

- graphics such as:
  - sprites
  - background images
  - 3D objects (including characters)
  - 3D levels
  - textures (and associated files)
  - skyboxes
- videos
- animations
- audio such as:
  - speech
  - sound effects
  - music
- text such as:
  - text files
  - script files
  -

9 A short report comparing two similar software packages that could create one asset and giving reasons for final choice of software used to create it.

10 A description of modifications carried out to at least five media assets.

National Unit Specification: statement of standards (cont)

UNIT Computer Games: Media Assets (SCQF level 5)

Candidates are encouraged to use the internet in any research, however, the evidence produced must be in their own words. Tutors should assure themselves of the authenticity of the candidates' evidence.

Written and/or oral recorded evidence is required which demonstrates that candidates have achieved all three Outcomes to the standard specified in the Performance Criteria. The evidence for all three Outcomes should be obtained under controlled, supervised conditions.

A checklist is required to confirm that each candidate has completed the above tasks, without undue assistance, to the standards defined in the performance criteria, and also to authenticate that the contents of the portfolio are the candidate's own work.

National Unit Specification: support notes

UNIT Computer Games: Media Assets (SCQF level 5)

This part of the Unit Specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional length is 40 hours.

GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

This Unit is a mandatory Unit in the NPA in Computer Games Development at SCQF level 5. It is included in the optional sections of Digital Media Computing frameworks and can be taken as a standalone Unit.

Outcome 1

Candidates will describe and compare media assets in an existing game. Ideally the existing game being studied should be similar in genre or type to the game being designed by candidates.

Table 1 overleaf demonstrates the typical assets that exist in a game and the level of description required.

Table 2 overleaf lists media graphics that may be chosen by candidates. The table also suggests possible comparisons of media assets. Candidates should be encouraged to identify other factors that they may wish to use for comparison.

Creative Commons is one method of licensing images, sounds and other creative works that lets others use the work legitimately. http://search.creativecommons.org

Creative Commons gives creators the following options:

- Attribution: others can copy, distribute, display, and perform the copyrighted work — and derivative works based upon it — but only if they give credit to the original creator.
- Non-commercial**:** others can copy, distribute, display, and perform the work — and derivative works based upon it — but for non-commercial purposes only.
- No Derivative Works**:** others can copy, distribute, display, and perform only verbatim copies of the work, not derivative works based upon it.
- Share Alike: others can distribute derivative works only under a licence identical to the licence that governs the original work.

Other methods to acquire assets legitimately may include:

- use Creative Commons search engines
- get permission from the copyright owner (eg the photographer)
- buy them (eg stock photos)

Many websites and search engines offer ways to search for work that is labelled for reuse or labelled for reuse with modification. For example, Google allows users to set usage rights in advanced search. If using search engines to source assets, candidates should follow the link to check the licence details.

Many creative works are shared with the condition that credit is given to the original creator.

Table 1

Media Asset	Description
Graphic	A graphic can be a vector or bitmap images, such as photographs, sprites, tiling textures, background images, etc Vector graphics are built up by using shapes. Each shape (object) which makes up a graphic has its own set of properties also known as attributes. A full definition of the attributes of the shape is stored. This is more memory efficient than bit-mapped graphics which store the state of every pixel. Vector graphics have small file sizes in comparison to bit-mapped graphics. Bitmapped graphics are made up of a rectangular grid (or array) of dots or pixels — each of which is stored individually. The colour value of every pixel is stored. File sizes can be large since each pixel would typically take up to three or four bytes. Bitmapped graphics (images) are captured by scanners and digital cameras are bitmapped. File types include jpeg, bmp, gif Capture methods: digital camera, scanner Types of graphical media assets used in existing games include: A sprite is a figure or character within a game. Sprites usually have a transparent outline and can be animated to simulate movement. Characters in some games are also known as avatars. A background image is a type of texture that shows a landscape image 3D objects (including characters): Items or characters that can be placed within the game 3D levels**:** laying out the areas of game play, such as hills, cities, rooms, tunnels, etc, for players and characters to move around in. Skyboxes: a skybox is a cube with background images that surrounds the game player in a 3D game. Textures: textures are attributes of graphics. This attribute defines the surface appearance of what objects with look like. It can be thought of as the skin of that wraps around the 3D framework of the object to give it a more realistic appearance images that are mapped onto surfaces of objects such as stone walls and wooden tables.
Videos	A video is a moving image file in a format that is compatible with the game development environment file types — avi, mpeg wav methods of capture — digital video camera tools for editing — titling, cropping
Animations	An animation is a collection of still images with each one in the sequence slightly different from the previous. The images are played quickly one after the other to give the illusion of movement.

Media Asset	Description
Audio	Audio is sound of any type played in a game. Types of audio media assets include: Speech: such as the voices for characters Sound effects: noises of objects in the game. Music: background music that usually loops and repeats during the game play. file types — raw, wav, mp3, midi. methods of capture — from microphone, extract from CD, using audio keyboard tools for editing — echo, change pitch, speed, amplify change tempo
Text	Text media assets are required for the game to provide dialogue, create and atmosphere give player feedback or instructions file types — txt, rtf methods of capture — keyboard, scanner, voice recognition, handwriting recognition

Table 2

Media Asset	Comparison of media assets
Graphics	What are the differences between vector and bitmap graphics? ♦ resolution independent — resolution dependent ♦ small file size — large file size ♦ unrealistic images — realistic images ♦ edit whole objects — edit to pixel level ♦ order/layering of objects — flat bed of pixels — painting on top of pixel destroys what is below What are the different creation/capture methods? ♦ hardware: digital camera, scanner ♦ software applications Graphic file types- jpeg v gif What factors affect quality of graphic and file size? ♦ low v high resolution on quality and file size ♦ different colour depths on quality and on file size ♦ lossy and lossless compression techniques Common attributes of 2D with 3D ♦ 2D: Common attributes in 2D include: shape, position, size, rotation, line colour and thickness, fill and layer number. The two key dimensions in 2D graphics are length and breadth 3D: 2D graphics relate to an x (length) and y (height) axis. 3D graphics have a third axis (the z-axis) which relates to the depth of the object ie the third dimension. 3D packages allow the user to view the scene from any perspective. The attributes of 3D shapes include: shape, position co-ordinates and size, rotation and texture.
Videos	Effect of changing frame rate, colour depth, resolution and duration on file size and quality
Animations	Two different methods of creating an animation 2D with 3D animation
Audio	Different methods of storing audio: raw, wav, mp3, midi.

Media Asset	Comparison of media assets
Audio: Speech	Voices of humans or aliens, monsters or animal sounds Voices outside in an open environment or inside a building Voices talking loudly or whispering? How does the character demonstrate different emotions? ♦ happy v sad ♦ angry v happy Does stereotyping in voices exist in this game? ♦ male v female ♦ hero v villain ♦ young v old ♦ alien v human
Audio: Sound effects	What are sound effects? ♦ noises of objects in the game How are these sound effects stored on the computer? ♦ file types Straight v Foley sound effects Same sound effect with a different wavelength, frequency, amplitude. 3D sound v surround sound. Compare realistic v non-realistic such as synthetic sounds. Compare mono, stereo, multi-channel and surround sound. Compare different types of data compression and their relative merits/demerits Compare industry standard software tools: Sound forge, Wavelab Peak, CoolEdit, Protools, Nuendo

Media Asset	Comparison of media assets
Audio: Music	What is music in gaming? ♦ background music that usually loops and repeats during the game play How is music used in gaming? ♦ create atmosphere ♦ give feedback — opening music v win/loss and credits What are the different file types: midi, aiff, wav. Linear music stream v interactive music Music at selection v game play Industry standard software such as: Logic, Cubase, Protools, Nuendo, Gigastudio Mono, stereo, multi-channel and surround sound Different types of data compression and their relative merits/demerits
Text	How are text media assets used in games: ♦ to provide dialogue ♦ create an atmosphere ♦ give player feedback ♦ instructions Different styles of writing and how they impact on different audiences. File types: txt, rtf Identify tools for checking grammar, punctuation and spelling

National Unit Specification: support notes (cont)

UNIT Computer Games: Media Assets (SCQF level 5)

Outcome 2

Candidates list how the media assets required will be sourced or produced and develop an understanding of available software applications.

Candidates will develop skills in informed decision making about approaches and possible solutions to the design brief within the constraints of the game development environment.

Candidates should be encouraged to obtain assets from legitimate sources such as stock libraries or video archives where the terms of use state that assets can be used and modified by others.

Candidates will plan which assets they will source legitimately. Assets can be sourced by acquiring an image from somewhere or someone else, for example downloading from a copyright free website. It will be helpful for candidates to have an idea of the type and quality of assets available from legitimate sources. Candidates should ensure that they log details of sourced assets to ensure that credit can be given when producing the final game in the Unit *Computer Games: Development*.

The list overleaf of asset types, suggested uses and description of asset is not restrictive. Candidates will plan to source, create and modify alternative types of suitable and feasible media assets for use within the game development environment.

Asset	Uses	Description
Graphics	Digital image	Vector or bitmap photographs, sprites, tiling textures, background image
Sprites	A figure or character within a game. Sprites usually have a transparent outline and can be animated to simulate movement. Characters in some games are also known as avatars.	Appearance: human/alien/animal Gender: male/female/other Size: small, average, large 2D, 3D Colour, colour of hair, costume Behaviour: good, evil, strong, weak
Textures	Textures are images that are mapped onto surfaces of objects	Stone, wood, metallic, rough, smooth
Background images	A type of texture that shows a landscape image.	Size and dimensions Lighting, shadows, weather
Skyboxes	In 3D games a skybox is a cube with background images that surrounds the game player.	Colour Size
Videos	Moving image files in a format that is compatible with the game development environment	Film of background scenery changing over time
Animations	Computer-based animations or moving image video files in a format that is compatible with the game development environment	Moving cartoon character
3D objects (including characters)	Items or characters that can be placed within the game	Objects such as furniture or props: shape, size and dimensions, colour and texture
3D levels	Laying out the areas of game play for players and characters to move around in	Hills, cities, rooms, tunnels, etc size and dimensions
Speech	Voices for characters	Loud, whisper, male, female, child, alien, animal Is echo required? High pitch, low pitch
Sound effects	Noises of objects in the game	Volume and intensity Loud, quiet, frightening, peaceful, fun Realistic, non-realistic such as synthetic sounds Long, short sound clip
Music	Background music that usually loops and repeats during the game play.	Volume and intensity Loud, quiet, frightening, peaceful, fun Long, short music clip
Text files	Text needed for the game such as dialogue or instructions	Font, size, colour
Script files	Identify what scripts will need to be written and what can be sourced from library in order to make game work	Code for using within game development environment

National Unit Specification: support notes (cont)

UNIT Computer Games: Media Assets (SCQF level 5)

Candidates will plan which assets they will capture or create. Assets can be captured using input devices such as recording the sound input from a microphone, scanning a graphic or typing in text using a keyboard. Assets can be created using tools in software packages.

Candidates compare two similar software packages that could create one asset and select appropriate software to produce the required asset, giving reasons for choice.

The reasons for the choice may be (but not restricted to) the following:

- tools available
- cost
- availability
- platform
- compatibility with other software
- compatibility with hardware

Selection and effective use of appropriate media, software and processes is of importance and candidates should have the opportunity to explore a variety of media asset types and software applications.

Outcome 3

Candidates will source media assets legitimately and acknowledge copyright and permissions for media assets. They will capture a variety of media assets using appropriate devices and create media assets using software tools. They will then modify assets as required by the brief. Candidates will be expected to store all assets using appropriate file formats and file management.

It may be that not all of the media assets are used in the final game. Some media assets may be used or created by candidates as a way of progressing lines of development. As part of the process of creating assets candidates may make different versions of an asset and select the best option.

Candidates will source two media assets and capture or create two media assets

Candidates will carry out intermediate modifications using more advanced editing tools and filters in software packages.

The following are examples of actions that can be carried out on various media asset types. Candidates can source, create and modify alternative types of media as long as they are suitable for use within the chosen game development environment. The list is not restrictive and not all actions listed would be carried out on the same asset.

Actions listed in italics would be carried out as part of the Unit *Computer Games: Development* and not as part of this Unit. These are included for information only.

National Unit Specification: support notes (cont)

UNIT Computer Games: Media Assets (SCQF level 5)

Sound
- source using for example www.freesound.org; freeplaymusic.com
- capture using appropriate software and a microphone; mobile phone
- create using for example Garageband
- intermediate modifications such as: echo; reverse; reverb; chorus; flange; create sound loop; apply fade ins/outs
- *[import into game development environment for speech for an avatar or character; sound effect for an object; background music]*

Vector graphics
- source using for example aviary.com or a vector image library
- create using for example aviary.com, Inkscape, DrawPlus or similar vector graphics or illustration software
- intermediate modifications such as: apply transitions; crop; set opacity level; edit lines and curves; alter texture
- *[import into game development environment as an object]*

Bitmapped graphics (including photographs, textures and sprites)
- source using for example www.flickr.com/creativecommons or another legitimate source of images
- source using online websites
- capture using a digital camera, webcam, mobile phone, scanner
- create using a graphics package or for example paint.net, PaintPlus, Artrage or similar image editing or paint software and a mouse or graphics tablet
- intermediate modifications such as: pixel level editing; use a cloning tool; add border or frame to an image; crop
- *[import into game development environment as an object, object or skybox texture, sprite, background graphic]*

Video
- Intermediate modifications such as split a clip; add transitions such as fade; dissolve wipe, incorporate a sound clip, insert still image

Candidates should store media assets in a digital format and record the sources of their media assets.

National Unit Specification: support notes (cont)

UNIT Computer Games: Media Assets (SCQF level 5)

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

If this Unit is undertaken in the context of the NPA in Computer Games Development at SCQF level 5, the following sequence of delivery is recommended:

1 Computer Games: Design
2 Computer Games: Media Assets
3 Computer Games: Development

If this Unit is delivered as part of the NPA in Computer Games Development at SCQF level 5 the following items should have been produced by candidates during the Unit *Computer Games: Design*

- game design brief
- game design document (or plan)
- a list of required media assets

If these items have not previously been produced by candidates they will have to be provided by the tutor or planned by candidates in agreement with the tutor.

In this Unit, candidates will create and prepare the media assets for a computer game.

There are ample opportunities for delivering this Unit in groups and in a vocational context. Candidates could already have formed groups (studios) to design a game. It would then be natural for them to all contribute to the development of the game assets however the contribution of each candidate must be clearly demonstrated in the process. One approach might be that they each contribute distinct assets for the game or that they each produce their own version of the assets. These approaches could allow them to compare and evaluate each others' efforts.

It is essential that each candidate identifies their own contribution to the task if working in a group and that they provide evidence for their own portfolio.

The actual distribution of time between Outcomes is at the discretion of the centre. However, the following distribution and order is suggested.

Outcome 1 5 hours
Outcome 2 5 hours
Outcome 3 30 hours

OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

In this Unit candidates are required to design and create media assets for a computer game which can provide opportunities to gather evidence towards aspects of *Information and Communication Technology* and *Problem Solving* at SCQF level 5.

This Unit may be delivered as a group project. This would provide opportunities to gather evidence towards aspects of *Working with Others* at SCQF level 5.

National Unit Specification: support notes (cont)

UNIT Computer Games: Media Assets (SCQF level 5)

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

A portfolio approach to assessment should be taken. The portfolio may be paper or electronic (digital). The portfolio should be constructed over the period of the Unit, with candidates contributing material to the portfolio on an on-going basis. The contents of the portfolio should be clearly labelled and related to specific Evidence Requirements. The inclusion of specific items in the portfolio should be negotiated between candidate and tutor with only the 'best' example of work being stored.

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003), SQA Guidelines on e-assessment for Schools (BD2625, June 2005).*

If an e-portfolio is used to capture candidates' work, it may take one of a variety of forms, ranging from general purpose digital repositories to specialised e-portfolio products. For example, a web log could be used to record candidate activity over the duration of the Unit. Specific entries to the blog could provide sufficient evidence in their own right (for example, a required identification) or could link to a file stored in another web service (such as a file hosting site). The use of a blog would aid authentication since any record of a candidate's day-to-day activities would provide implicit evidence of participation and ownership.

If a candidate is undertaking this Unit as part of the NPA in Computer Games Development at SCQF level 5 then the evidence should be retained as part of a portfolio of work required for the Units *Computer Games: Design* and *Computer Games: Development* (SCQF level 5).

DISABLED CANDIDATES AND/OR THOSE WITH ADDITIONAL SUPPORT NEEDS

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website **www.sqa.org.uk/assessmentarrangements**